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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/817,701	03/26/2001	Shijun Sun	8371-127	9282

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Stephen S. Ford
MARGER JOHNSON & McCOLLOM, P.C.
1030 S.W. Morrison Street
Portland, OR 97205

EXAMINER

AN, SHAWN S

ART UNIT PAPER NUMBER

2613

DATE MAILED: 11/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/817,701

Applicant(s)

SUN ET AL.

Examiner

Shawn S An

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5, 17-19 and 24 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-16, 20-23 and 25-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. As per Applicant's instruction as filed on 6/30/04, claims 1, 5, 13, 17-18, 20, and 24 have been amended.

Response to Remarks

2. Applicant's arguments with respect to claims 1-2, 13, and 20 have been considered but are moot in view of the new ground(s) of rejection incorporating the same prior art references used in the last office action.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 9-13, 20, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrews et al (4,935,810).

Regarding claims 1, 9, and 13, Andrews et al discloses an encoder/method for encoding an image, comprising:

a processor (Fig. 2A, 350) adapted to identify adjacent frames in the input image;
identifying coding parameters (Fig. 2A, 315) for the adjacent frames;
comparing the coding parameters between the adjacent frames (col. 5, lines 59-

64); and

skipping (disable) deblocking filtering (Fig. 2A, 303', OFF) of blocking artifacts for removing image residuals (322) caused by encoding the image according to the comparison of the coding parameters between the identified adjacent frames when the

comparison indicates that the adjacent frames having similar coding parameters (PQUANT < 5) (col. 5, lines 51-67; col. 6, lines 1-4) and

deblock (enable) filtering (Fig. 2A, 303', ON) of blocking artifacts to remove image residuals (322) between the identified adjacent blocks when the comparison between the coding parameters for the identified adjacent frames indicates that the adjacent frames do not have similar coding parameters (PQUANT > 5) (col. 5, lines 51-67; col. 6, lines 1-4).

Andrew et al utilizes adjacent frames for comparing the coding parameters as opposed to utilizing adjacent blocks for comparing the coding parameters.

However, the Examiner takes official notice that an encoder encoding an image by utilizing blocks or macroblocks (sub-frames) are conventionally well known in the art.

Therefore, it would have been obvious to a person of skill in the art employing an encoder as taught by Andrews et al to reduce the frame level to the block level for enhancing controlling of the deblock filter for further reducing blocking artifacts.

Regarding claims 10 and 20, Andrews et al discloses all of the claimed limitation as an encoder (Fig. 2A) except the decoder.

Furthermore, Andrew et al discloses a decoder (Fig. 3) illustrating block diagram of an embodiment for decoding images sourced from the encoding arrangement of Fig. 2.

Therefore, it would have been obvious to a person of skill in the art employing an encoder as taught by Andrews et al to incorporate a decoder for reverse (controlling deblock filter) processing the encoder (Fig. 2A) so as to effectively decode the encoded images for displaying purposes.

Regarding claim 11, Andrews et al discloses coding parameters in a luminance channel of the adjacent frames (Fig. 2B, 372); and

controlling deblock filtering for both the luminance channel and a chrominance channel according to identified luminance channel (303''; col. 6, lines 8-21).

Therefore, it would have been obvious to a person of skill in the art employing an encoder as taught by Andrews et al to modify the concept as above so as to identify similarities in the luminance channel for controlling deblock filtering for both the

luminance channel and a chrominance channel according to identified similarities in the luminance channel since such artifacts known in the luminance data are much less severe than chroma-based artifacts.

Regarding claim 12, Andrews et al discloses H.263 and H.261 (col. 1, lines 43-52).

Regarding claim 25, Andrews et al discloses inverse transforming the encoded image, generating a reconstructed image from the comparison between the encoded image and the reference frame (Fig. 2A, elements 320, 322), and skip deblock filtering the reconstructed image according to the coding parameter (PQUANT) for the adjacent frames (303').

Regarding claim 26, Andrews et al discloses transform coefficients (408), motion vectors (col. 7, lines 12-15), and reference frame information (412).

Regarding claim 27, Andrews et al discloses skipping deblock filtering in one of a loop filter (Fig. 2A, 303').

5. Claims 2, 14, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrews et al (4,935,810) as applied to claims 1, 13, and 20 above, respectively, and further in view of Bolton (5,768,433).

Regarding claims 2, 14, and 21, Andrews et al fails to disclose skipping deblock filtering between the adjacent blocks according to the identified MV and reference frames.

However, Bolton teaches skipping/enabling deblock filtering the macroblocks according to the identified MV (Col. 11, lines 1-15).

Furthermore, a motion vector involves a magnitude and a direction between a point (reference) A to a point B.

Therefore, it would have been obvious to a person of skill in the art employing an encoder as taught by Andrews et al to incorporate the teachings as above as taught by Bolton so as to skip filtering when the adjacent blocks have similar motion vectors pointing to a same reference image frame as an efficient way to avoid filtering when it is not necessary.

6. Claims 3, 6-7, 15, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrews et al (4,935,810) as applied to claims 1, 11, 13, and 20 above, respectively, and further in view of Kim (5,737,019).

Regarding claims 3, 15, and 22, Andrews et al fails to disclose skipping deblock filtering according to the identified residual coefficients.

However, Kim teaches skipping deblock filtering according to the identified residual coefficients (Col. 16, lines 28-35).

Therefore, it would have been obvious to a person of skill in the art employing an encoder as taught by Andrews et al to incorporate the teachings as above as taught by Kim so as to skip filtering between the adjacent blocks when the transform coefficients are similar as an efficient way to avoid filtering when it is not necessary.

Regarding claim 6, Andrews et al discloses transforming the adjacent frames using DCT to generate the transform coefficients (306).

Regarding claim 7, Andrews et al discloses comparing frames in the image with reference frame (302), and transforming the result of the comparison into transformed frames having transformed coefficients (306).

Andrews et al fails to disclose comparing the similarities between the transformed coefficients, and skipping deblock filtering according to the result of the comparison between the transform coefficients.

However, Kim teaches comparing the similarities between the transformed coefficients, and skipping deblock filtering according to the result of the comparison between the transform coefficients (Fig. 6; Col. 16, lines 28-35).

Therefore, it would have been obvious to a person of skill in the art employing an encoder as taught by Andrews et al to incorporate the teachings as above as taught by Kim so as to skip filtering between the adjacent blocks when the transform coefficients are similar as an efficient way to avoid filtering when it is not necessary.

7. Claims (4, 8), 16, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrews et al (4,935,810) as applied to claims 1, 13, and 20 above, respectively, and further in view of Peng et al (6,618,445).

Regarding claims 4, 8, 16, and 23, Andrews et al fails to disclose skipping deblock filtering according to DC components in the residual coefficients.

However, Peng et al teaches disclose skipping deblock filtering according to DC components in the residual coefficients (Col. 6, lines 62-67).

Therefore, it would have been obvious to a person of skill in the art employing an encoder as taught by Andrews et al to incorporate the teachings as above as taught by Peng et al so as to skip filtering between the adjacent blocks when the DC components are similar as an efficient way to avoid filtering when it is not necessary.

Allowable Subject Matter

8. Claims 5, 17-19, and 24 are allowed as having incorporated the allowable subject matter as discussed in the last Office action filed on 3/26/2004.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to **Shawn S An** whose telephone number is 703-305-0099. The Examiner can normally be reached on Flex hours (10).

11. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



SSA

Primary Patent Examiner

10/31/04